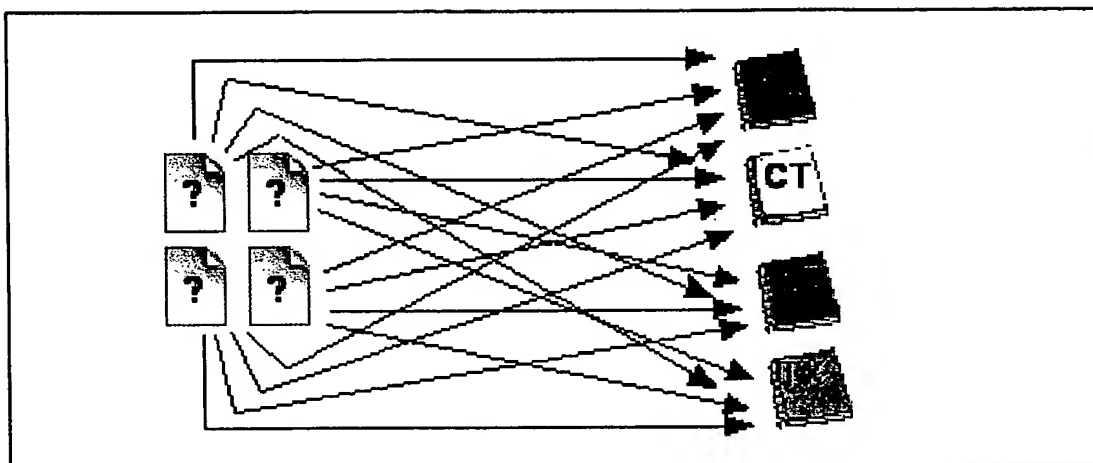
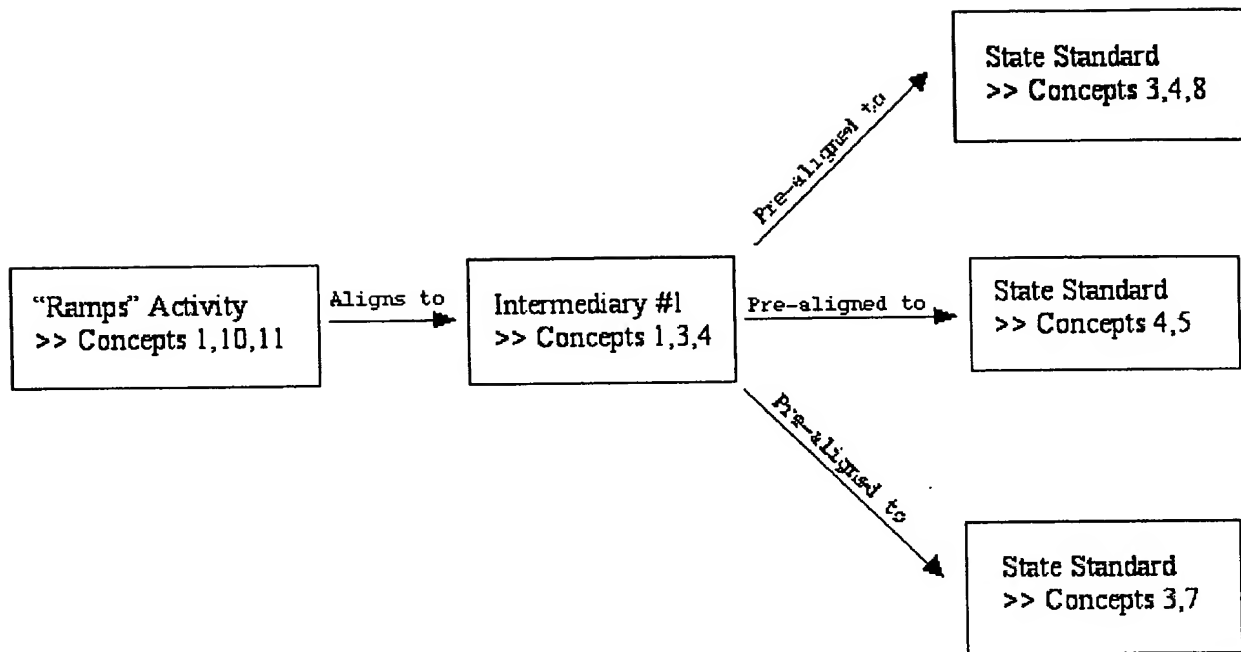


**Fig. 1**



**Prior Art**

Fig. 2



Prior Art

Fig. 3

Courses	Units	Activities	Level	State/National
			Category	Criterion

Curriculum: Red Oak High School

Subject: Mathematics

Grade: 9-10

Category: Data Analysis, Statistics, and Probability

Type: District Objectives

Topic: Concepts & Skills

NEW ENTRY

Search for: in All Subjects, All Units

SEARCH RESULTS

1. Select, create, and interpret an appropriate graphical representation (e.g., scatterplot, table, stem-and-leaf plots, circle graph, line graph, and line plot) for a set of data.
2. Use appropriate statistics (e.g., mean, median, range, and mode) to communicate information about graphically represented data. Use these notions to compare different sets of data.
3. Describe and explain how the relative sizes of a sample and the population affect the validity of predictions from a set of data.
4. Approximate a line of best fit (trend line) given a set of data (e.g., scatterplot). Use technology when appropriate.

Fig. 4

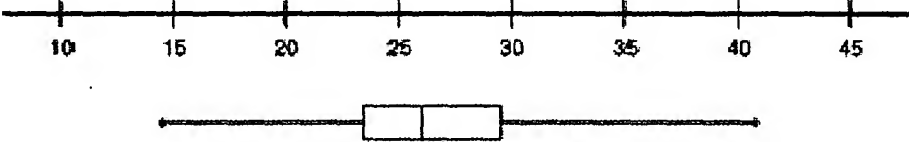
Use appropriate statistics (e.g., mean, median, range, and mode) to communicate information.	
View Edit Link Reports Planner	
Summary	
This mathematics objective requires collaborative teaching between the math and science departments.	
Activities:	
(i) Science & Technology	(ii) Gr: 9-10
(iii) Teacher Authored	(iv) Core Curriculum Activity Descriptions
<ul style="list-style-type: none"> <li>Ⓢ <u>Ecology and Energy</u></li> <li>Ⓢ <u>Competition - Natural Selection</u></li> <li>Ⓢ <u>Ball Bouncing Lab</u></li> </ul>	
Mathematics	Gr: 9-10
Teacher Authored	Core Curriculum Activity Descriptions
<ul style="list-style-type: none"> <li>Ⓢ <u>Demographic Profiling</u></li> <li>Ⓢ <u>Validate Your Conclusions</u></li> <li>Ⓢ <u>Statistical Problem</u></li> </ul>	
Mathematics	Gr: 9-10
Teacher Authored	Core Assessment Task Bank
<ul style="list-style-type: none"> <li>Ⓢ <u>Grade 10 Math Midterm 2001 Question #6</u></li> <li>Ⓢ <u>Grade 10 Math Midterm 2002 Question #17</u></li> </ul>	
Mathematics	Gr: 9-10
ABC Publishing Company	Core Curriculum Activity Descriptions
<ul style="list-style-type: none"> <li>Ⓢ <u>Mean or Median?</u></li> <li>Ⓢ <u>Graphing and Statistics Challenge</u></li> </ul>	
Mathematics	Gr: 9-10
State Dept. of Education	Core Assessment Task Bank
<ul style="list-style-type: none"> <li>Ⓢ <u>2001 Grade 10 Math State Test Question #19</u></li> <li>Ⓢ <u>2001 Grade 10 Math State Test Question #25</u></li> </ul>	
Standards:	
MA 2000 Math	
Mathematics	Gr: 9-10
Data Analysis, Statistics, and Probability	
All Standards	
<ul style="list-style-type: none"> <li>Ⓢ <u>10.D.2 Know the definitions of the mean, median, and mode of distribution of real valued data, and can compute them in particular situations.</u></li> <li>Ⓢ <u>10.D.1 Organize and describe distributions of data using a number of different methods, including frequency tables, histograms, standard line and bar graphs, stem and leaf displays, scatter plots, and box and whisker plots.</u></li> </ul>	

Fig. 5

### Graphing and Statistics Challenger

[Home](#)
[Link](#)
[Records](#)
[Planner](#)

[Go Back to National Curriculum Framework Objectives](#)

Prerequisite Understandings	In order for students to master statistics and apply graphing skills well, students need to be asked to apply these skills in many different contexts. Thus we strongly encourage that you use ABC
Learning Styles	This activity predominantly uses oral and visual learning styles.
Extensions	If student easily completes this activity, assign our "Advanced Graphing and Statistics Challenger" activity.
Launch Program	<a href="#">Click here to begin activity.</a>
Sample Question	<p>The box and whisker graph shown below represents the results of a survey of the estimated gas mileage of 100 car models.</p>  <p>Which statistics — mean, median, mode, range — can be determined from this graph?</p> <p> <input type="radio"/> A. mean only  <input type="radio"/> B. median only  <input type="radio"/> C. range and mean  <input checked="" type="radio"/> D. range and median         </p>

Next scheduled date:

Courses/Units containing this activity/resource:

Red Oak High School

Mathematics

Grade 10 Mathematics 201

Probability and Statistics

Gr: 9-10

Objectives for this activity/resource:

Red Oak High School

Mathematics

Data Analysis, Statistics, and Probability

Concepts & Skills

Gr: 9-10

District Objectives

☒ 1. Select, create, and interpret an appropriate graphical representation (e.g., scatterplot, table, stem-and-leaf plot, circle graph, line graph, and box plot) for a set of data.

☒ 2. Use appropriate statistics (e.g., mean, median, range, and mode) to communicate information about graphically represented data. Use these notions to compare different sets of data.

Fig. 6

## Simulation: Natural Selection

View Edit Link Reports Planner  
 Print Copy Make a Copy Delete

Summary	Students conduct a month-long research project whereby they analyze data on a mouse population over 15 years. They submit a written report in which they propose and defend at least one theory pertaining to the mouse population data.
Materials	graph paper, ruler, and student handout material.
Duration	1 period per week for four weeks.
References	Biology -Lab Projects. Investigation 30-1, pg. 117, "Lab Worksheets" manual.

Next scheduled date:

### Courses/Units containing this activity/resource:

Red Oak High School  
 Science & Technology Gr: 9-10

CPI Biology Course Guide

Ⓢ Evolution CPI

Red Oak High School  
 Science & Technology Gr: 9-10

Honors Biology Course Guide

Ⓢ Evolution (Honors)

### Objectives for this activity/resource:

Red Oak High School  
 Mathematics Gr: 9-10  
 Data Analysis, Statistics, and Probability District Objectives  
 Concepts & Skills

Ⓢ 2. Use appropriate statistics (e.g., mean, median, range, and mode) to communicate information about graphically represented data. Use these notions to compare different sets of data.

Red Oak High School  
 English Language Arts Gr: 9-10  
 Composition Strand District Objectives  
 Writing

Ⓢ 3. For informational/expository writing: Write well-organized research papers that prove a statement (e.g., theory, hypothesis) using logical organization, effective supporting evidence, and variety in sentence structure.

Red Oak High School  
 Science & Technology Gr: 9-10  
 Life Science (Biology) District Objectives

6. Ecology

Ⓢ 4. Identify the factors in an ecosystem that influence fluctuations in population size.

Ⓢ 5. Analyze changes in population size resulting from changes in climate, predator-prey interactions, food availability, or human activity.

Fig. 7

**Activity Planner**

**Activity Name:** Graphing Scientific Data

**Summary:** Students are given a table of scientific data and asked to graph, using graph paper and/or computer spread sheet programs. Students use relevant math skills to create multiple graphs that effectively present and analyze the data given them. Using their graphs, students write their predictions and conclusions.

**Materials:** Data tables

**Duration:** 1-2 periods

**Broad Understanding:** Students understand how to apply appropriate statistics skills to analysis of scientific data

**Additional Resources:** "Math/Science Tasks" pp. 13-20

**Next scheduled date:**

**Objectives for this activity/resource:**

**Red Oak High School**

**Mathematics**

**Data Analysis, Statistics, and Probability**

**Concepts & Skills**

**Gr 9-10**

**Discrete Objectives**

① 1. Select, create, and interpret an appropriate graphical representation (e.g., scatterplot, table, stem-and-leaf plot, circle graph, line graph, and line plot) for a set of data.

② 2. Use appropriate statistics (e.g., mean, median, range, and mode) to communicate information about graphically represented data. Use these notions to compare different sets of data.

Fig. 8

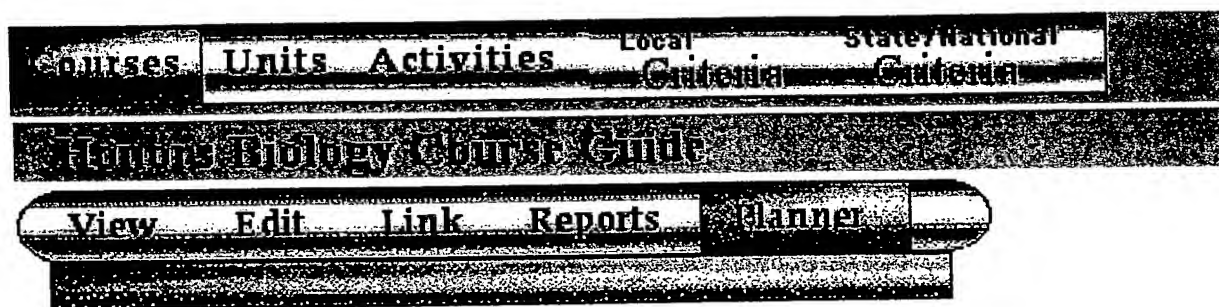
Mathematics Objective 10.D.2: Know the definitions of the mean, median, and mode of distribution of real valued data, and can compute them in particular situations.	
Curriculum Activity Planner	
Summary	This mathematics objective requires collaborative teaching between the math and science departments
Activities:	
Science & Technology	Gr: 9-10
Teacher Authored	Core Curriculum Activity Descriptions
<ul style="list-style-type: none"> <li>③ <u>Ecotrends and Energy</u></li> <li>③ <u>Competition - Natural Selection</u></li> <li>③ <u>Ball Bouncing Lab</u></li> </ul>	
Mathematics	Gr: 9-10
Teacher Authored	Core Curriculum Activity Descriptions
<ul style="list-style-type: none"> <li>③ <u>Analyzing data</u></li> <li>③ <u>Demographic Profiling</u></li> <li>③ <u>Validate Your Conclusions</u></li> <li>③ <u>Statistical Puzzles</u></li> </ul>	
Mathematics	Gr: 9-10
Teacher Authored	Core Assessment Task Book
<ul style="list-style-type: none"> <li>③ <u>Grade 9 Math Midterm 2001, Question #6</u></li> <li>③ <u>Grade 9 Math Midterm 2002, Question #12</u></li> </ul>	
Mathematics	Gr: 9-10
ABC Publishing Company	Core Curriculum Activity Descriptions
<ul style="list-style-type: none"> <li>③ <u>Mean or Median??</u></li> <li>③ <u>Graphing and Statistics Challenges</u></li> </ul>	
Mathematics	Gr: 9-10
State Dept. of Education	Core Assessment Task Book
<ul style="list-style-type: none"> <li>③ <u>2001 Grade 10 Math State Test Question #19</u></li> <li>③ <u>2001 Grade 10 Math State Test Question #28</u></li> </ul>	
Standards:	
MA 2000 Math	
Mathematics	Gr: 9-10
Data Analysis, Statistics, and Probability	
10 Standards	
<ul style="list-style-type: none"> <li>③ <u>10.D.2 Know the definitions of the mean, median, and mode of distribution of real valued data, and can compute them in particular situations.</u></li> <li>③ <u>10.D.1 Organize and describe distributions of data using a number of different methods, including frequency tables, histograms, standard line and bar graphs, stem and leaf displays, scatter plots, and box and whisker plots.</u></li> </ul>	



Fig. 9

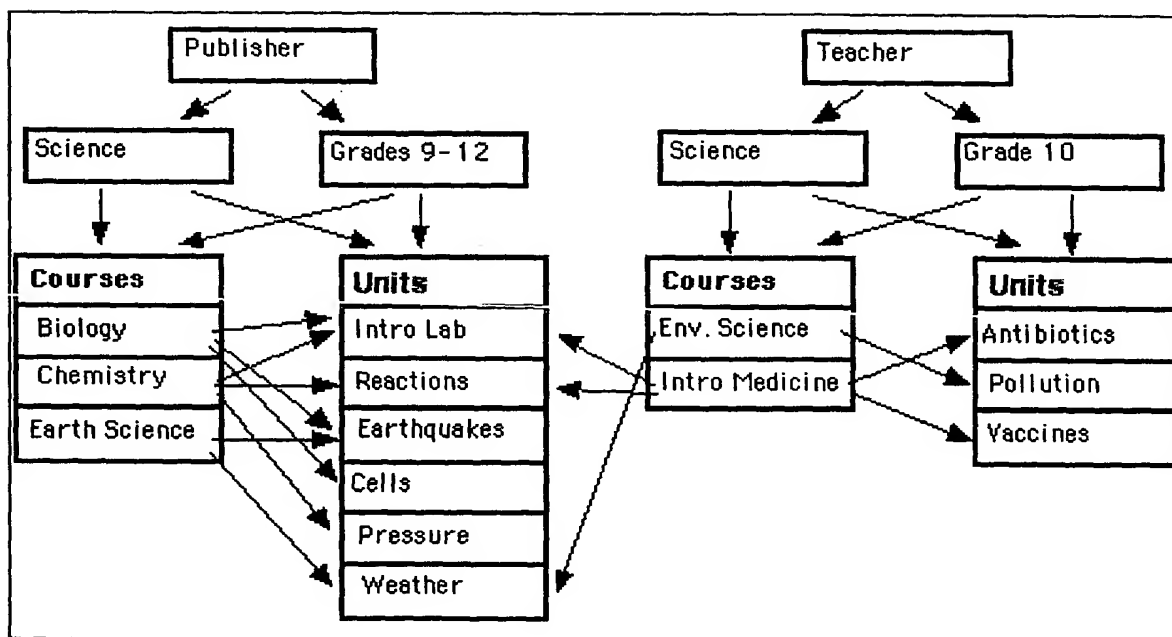
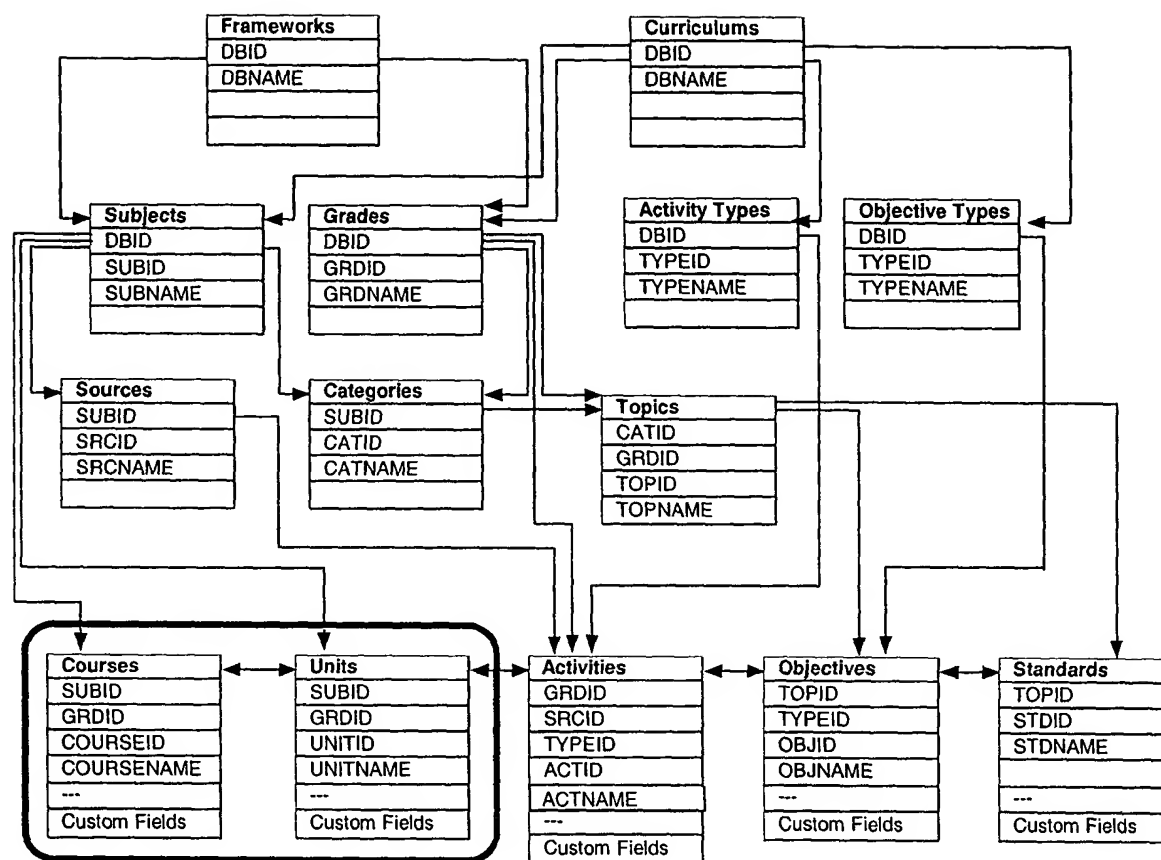
Dyson Cryer			
Improve Students' Understanding of Genetics in the 9th and 10th grades	<p>1). By February, 90% of students in Grade 10 Honors Biology will obtain an average score of 8 or better on assessed classroom activities for the Heredity unit.</p> <p>Target: Last year, 80% of students obtained an average score of 8 or better.</p>	<p><b>B</b> <math>\div</math> <b>3</b> Build a Baby</p> <p>Summary: Students, working in pairs, "build a baby" from the combination of genes for specific traits. One gene (represented by one side of a coin) is contributed by each "parent". The concept of dominance/recessiveness as well as codominance is introduced. The concept that each parent contributes a minimum of one gene to his/her offspring is reinforced.</p> <p>References: "So You're Going to have A Baby" (see Bemon or West for copies of this investigation)</p> <p>Materials: pennies, packet of instru...</p>	<p><b>B</b> <math>\div</math> <b>3</b> 3.5 Differentiate between dominant, recessive, codominant, polygenic, and sex-linked traits.</p>
			<p><b>D</b> <math>\div</math> <b>3</b> 3.6 State Mendel's laws of segregation and independent assortment.</p>
			<p><b>B</b> <math>\div</math> <b>3</b> 3.7 (2 Yr. Science Sequence) Use a Punnett Square to determine the genotype and phenotype of monohybrid crosses.*</p>

Fig. 10



« < April 2002 > »					
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
	1 • <u>Basic Biochemistry Part 2 - Filmstrip</u>	2 • <u>Designer Snacks</u>	3 • <u>DNA Structure and Function</u>	4 • <u>DNA Structure and Function</u>	5 • <u>DNA extraction</u>
7	8 • <u>Introduction to Protein Synthesis</u>	9 • <u>Protein Synthesis Drama</u>	10 • <u>Race for the Double Helix</u>	11 • <u>Student DNA model</u>	12 • <u>Enzymes</u>

Fig. 11



**Fig. 12**

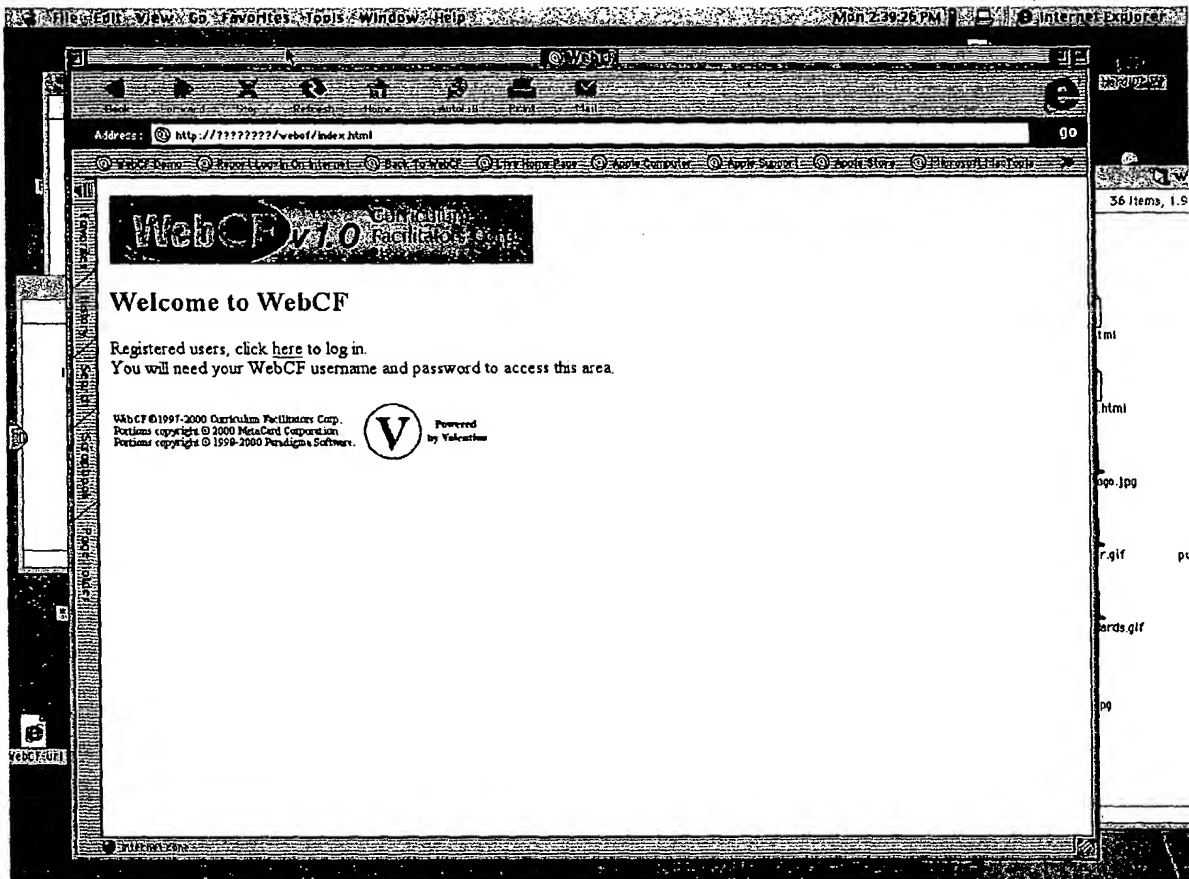


Fig. 13

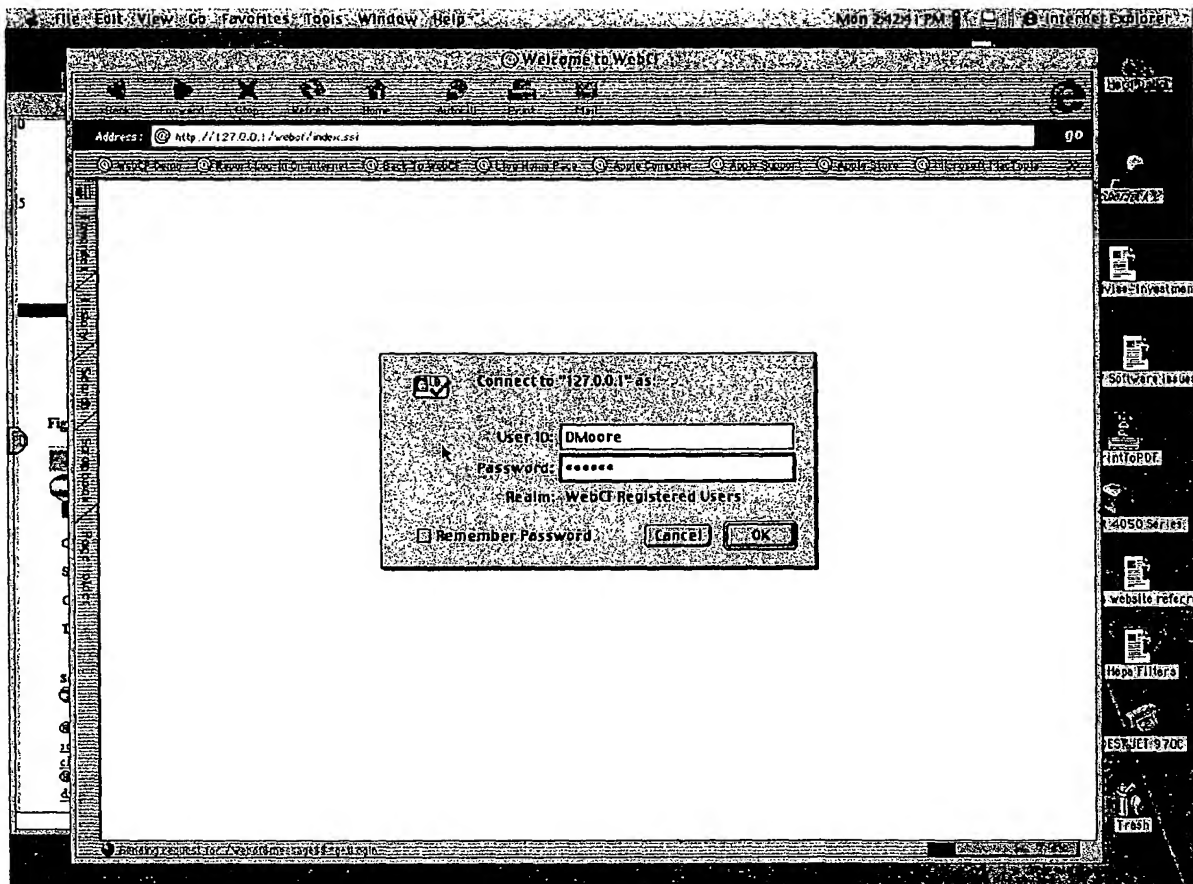


Fig. 14






Courses	Units	Activities	Local Criteria	State/National Criteria
Curriculum: Barnstable High School				
Subject: Science & Technology		Grade: 9-10		
<b>New Record</b>				
Search for:		in All Subjects		All Grades
<b>Search Courses</b>				
 <u>CP1 Biology Course Guide</u>				
 <u>CP2 Biology Course Guide</u>				
 <u>Honors Biology Course Guide</u>				
 <u>Physical Science Concepts CP1&amp; CP2 Guide</u>				
 <u>Physical Science Honors Course Guide</u>				

Fig. 15

<b>Courses</b>	<b>Units</b>	<b>Activities</b>	<b>Local Criteria</b>	<b>State/National Criteria</b>
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**21 activities found. Displaying 1 through 10**

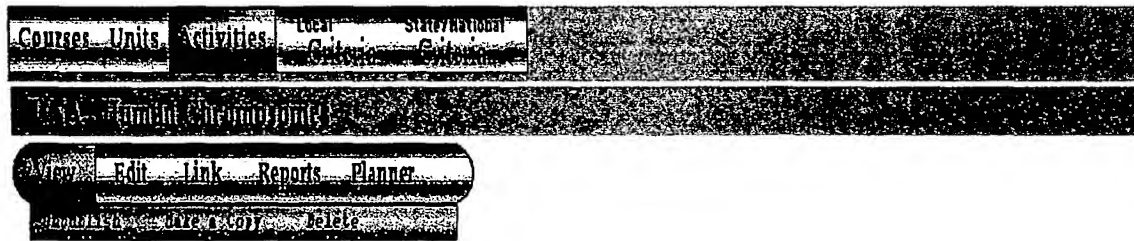
Search for:  in  ,

Jump to page: [prev] [next] 1 2 3

<b>Barnstable High School</b>	
<b>Science &amp; Technology</b>	<b>9-10</b>
<b>Teacher-Authored</b>	<b>Core Curriculum Activity Descriptions</b>

- 1     **DNA - Human Chromosomes**  
*Summary:* In class discussion, students will be able to explain the relationship between DNA, genes and chromosome. Students will define and explain the significance of the diploid number for all living things and compare that to the haploid ....
- 2     **DNA Fingerprinting in Forensic Science**  
*Summary:* Students are given a simulated electrophoresis gel of the DNA of 9 suspects in a murder investigation. This gel or "Suspect DNA Analysis Card" is used to match the evidence found ....
- 3     **DNA Structure**  
*Summary:* Students count out nucleotides and determine that A pairs with T and G with C as the students are introduced to DNA structure. *Materials:* scissors, paper, tape 4 crayon colors: red, blue, green, yellow; *Duration:* 1 ....

Fig. 16



Summary	In class discussion, students will be able to explain the relationship between DNA, genes and chromosome. Students will define and explain the significance of the diploid number for all living things and compare that to the haploid number (using the human 46/23 as an example; Discuss and give examples of chromosomal nondisjunction disorders.
References	Susan Offner, 1992. "American Biology Teacher", "Problem Solving/Critical Thinking: Chromosomal Nondisjunction Disorders"
Materials	Handout of chromosome map, worksheet on nondisjunction disorders, overhead/board, diagrams.
Duration	1 period

Next scheduled date:

Courses/Units containing this activity/resource:

Barnstable High School

Science & Technology

Gr: 9-10

Honors Biology Course Guide

Cell Division

Objectives for this activity/resource:

Barnstable High School

Science & Technology

Gr: 9-10

Life Science (Biology)

State Standards

3: Genetics

- ① 3.0 Genetics - Broad Concept: Genes are a set of instructions encoded in the DNA sequence of each organism that specify the sequence of amino acids in proteins characteristic of that organism.
- ② 3.1 (2 Yr. Science Sequence) Describe the structure and function of DNA, and distinguish among replication, transcription, and translation.\*



Fig. 17

**DNA - Human Chromosomes**

**View Edit Link Reports Planner**

Curriculum:

Subject:  Grade:

Category:  Type:

Topic:

Search for:  in ,

**Search Objectives**

☒ 3.0 Genetics - Broad Concept: Genes are a set of instructions encoded in the DNA sequence of each organism that specify the sequence of amino acids in proteins characteristic of that organism.

☒ 3.1 (2 Yr. Science Sequence) Describe the structure and function of DNA, and distinguish among replication, transcription, and translation.\*

☐ 3.2 Describe the processes of replication, transcription, and translation and how they relate to each other in molecular biology.

☐ 3.3 Describe the general pathway by which ribosomes synthesize proteins by using tRNAs to translate genetic information encoded in mRNAs.

**Fig. 18**

New Baseline Curriculum (Source Data)	Existing Baseline Curriculum (Central Data)	State / National Standards (Target Data)
Berkeley South Elementary Science Grades K -2 Inquiry Graphing Skill Objectives  2.2 Compare data on simple graphs.	Berkeley South Elementary Mathematics Grades K -2 Number Sense & Operations Objectives Master  1.1 Compare sets of objects and describe a quantitative relationship (e.g. less than, more).	California Mathematics Grade 1 Content Standards (K-7) Statistics, Data Analysis, and Probability  1.0 Students organize, represent, and compare data by category on simple graphs and charts:  1.2 Represent and compare data (e.g., largest, smallest, most often, least often) by using pictures, bar graphs, tally charts and picture graphs.

**Fig. 19**

**Framework: Sunshine State Standards Grade Level Expectations**

**Florida Department of Education 1**

**Subject: Mathematics**

**Grade: K-2**

**Category: Number Sense**

**Topic: Concepts, and Operations**

**Level 1.** *Standard 1: The student understands the different ways numbers are represented and used in the real world.*

**Level 2: Benchmarks by Grade Cluster**

*Benchmark 1.1: The student associates verbal names, written word names, and standard numerals with the whole numbers less than 1000.*

**Level 3: Grade- Specific Expectations**

1.1.1. In Kindergarten, student counts up to 10 or more objects using verbal names and one-to-one correspondence....

1.1.2 In First Grade, student compares and orders whole numbers to 100 or more using concrete materials, drawings, number lines, and symbols ( $<$ ,  $=$ ,  $>$ )....

1.1.3 In Second Grade, student represents real-world applications of whole numbers, to 1000 or more, using concrete materials, drawings, and symbols.